RE ?????? SANTA FE

Renewable Energy Financing District

REPOWER Santa Fe

- A County-wide program that provides up-front financing for renewable energy projects.
  - Residential
  - Commercial

Renewable Energy Projects

- Solar thermal
- Solar electric
- Wind generation
- Geothermal
  - Ground-source heat pumps

What is a Special Assessment District?

- Loan provided by County
- Special Assessment added to property tax bill
- Santa Fe County is the geographical boundary
- BUT, only property owners who opt in are part of the District

What are the advantages?

- Loan attached to the property
- Long term
- Removes up-front costs
- Customer chooses installer
- Utility bills decrease

Other Advantages

- State and federal tax credits
- REC's from PNM for solar electricity

What are the requirements?

- Applicant is owner of property
- Current on property taxes
- No past record of non-payment
- Cost of improvement < 10-20% of assessed value of property
- Cost of residential improvement < $?

More Possible Requirements

- $250 application fee
- Applicants and contractors attend workshops
- Not upside-down on mortgage

Process

- Attend workshop
- Identify type of project
- Choose installer
- Description and quote for project
- Fill out application (web or paper)
- Include project documentation

Process (con't)

- County will verify that
  - Applicant is owner of record
  - Project qualifies
  - Other requirements fulfilled
- Approve or deny
- Upon completion, installer reimbursed
- County Treasurer adds Special Assessment to property tax bill

More Information

- Contact Duncan Sill at 505-995-2728 or
- e-mail dsill@santafecounty.org

- Website: santafecounty.org with details under “Renewable Energy”

Small Solar PV Program

February 20, 2010

The power to make life better. **Together.**

PNM

Agenda

PV Program Overview

Sample PV Systems

- Applications
- 2010 Proposed Programs
- How to Contact Us

Program Description

Small PV Program

System size (inverter's maximum AC output) up to 10kW

All Small PV systems are net metered

Energy produced by PV < energy used = use up bank or billed

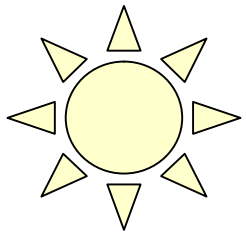
Energy produced by PV > energy used = banked

Small PV systems eligible for voluntary Renewable Energy Certificate purchase by PNM

$.13 per kWh

Contract for REC purchase is for 12 years

What is a REC?



REC = Renewable Energy Certificate

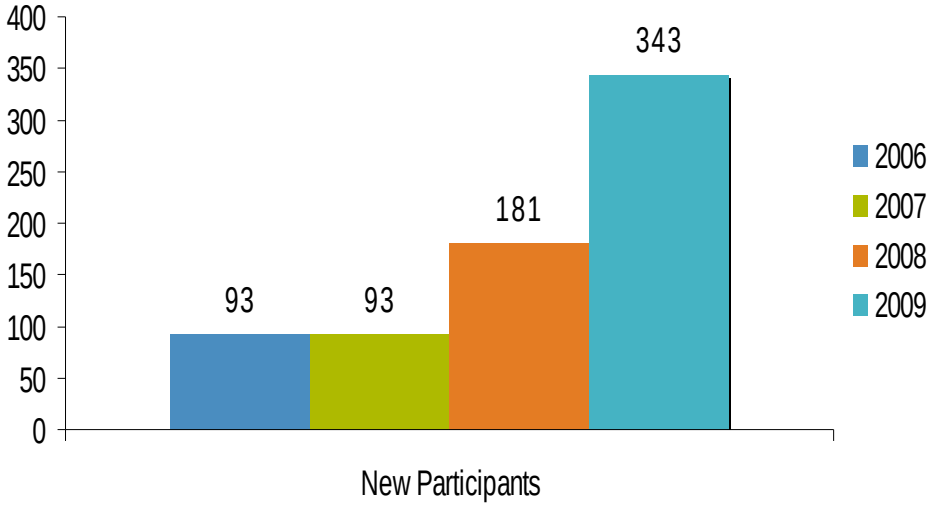
1 kWh generated from PV

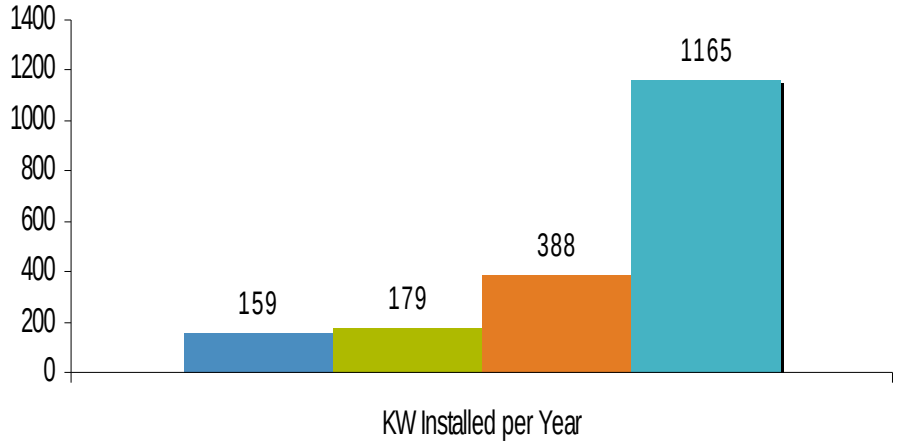
1 REC purchased at 13 cents (environmental attribute)

Customer participates in PNM's net metering program (energy component)

1 solar kWh provides Energy Component + Environmental Attribute

Customer-Owned Solar Facilities





Sample PV Systems

2.5KW SYSTEM – SANTA FE

3.41KW SYSTEM - ALBUQUERQUE

2.8KW SYSTEM – E. MOUNTAIN

5.12KW SYSTEM - DEMING

5KW SYSTEM - PNM

10.08KW SYSTEM - SIPI

Sample PV System

To get application

Go to PNM.com/solar

Click on ‘Learn how to participate’

Click on Step 3

Click on ‘Print and complete’ for the application in your particular county or city

Proposed Solar Performance Program

1 to 100 kW AC

- **15 year agreement**
- **Credits range from $.16 to $.26**
- **Applications accepted anytime**

>100 to 1000 kW AC

- **20 year agreement**
- **Credits range from $.16 to $.24**
- **Applications during open enrollment only**

Thank you!

Contact: Jody Karp

Email: jody.karp@pnm.com

Phone: (505) 241-2491

Renewable Energy for Santa Fe

Randy Sadewic

Positive Energy, Inc.

Typical Energy Costs in New Mexico

Household Energy Costs & CO_2 per Year

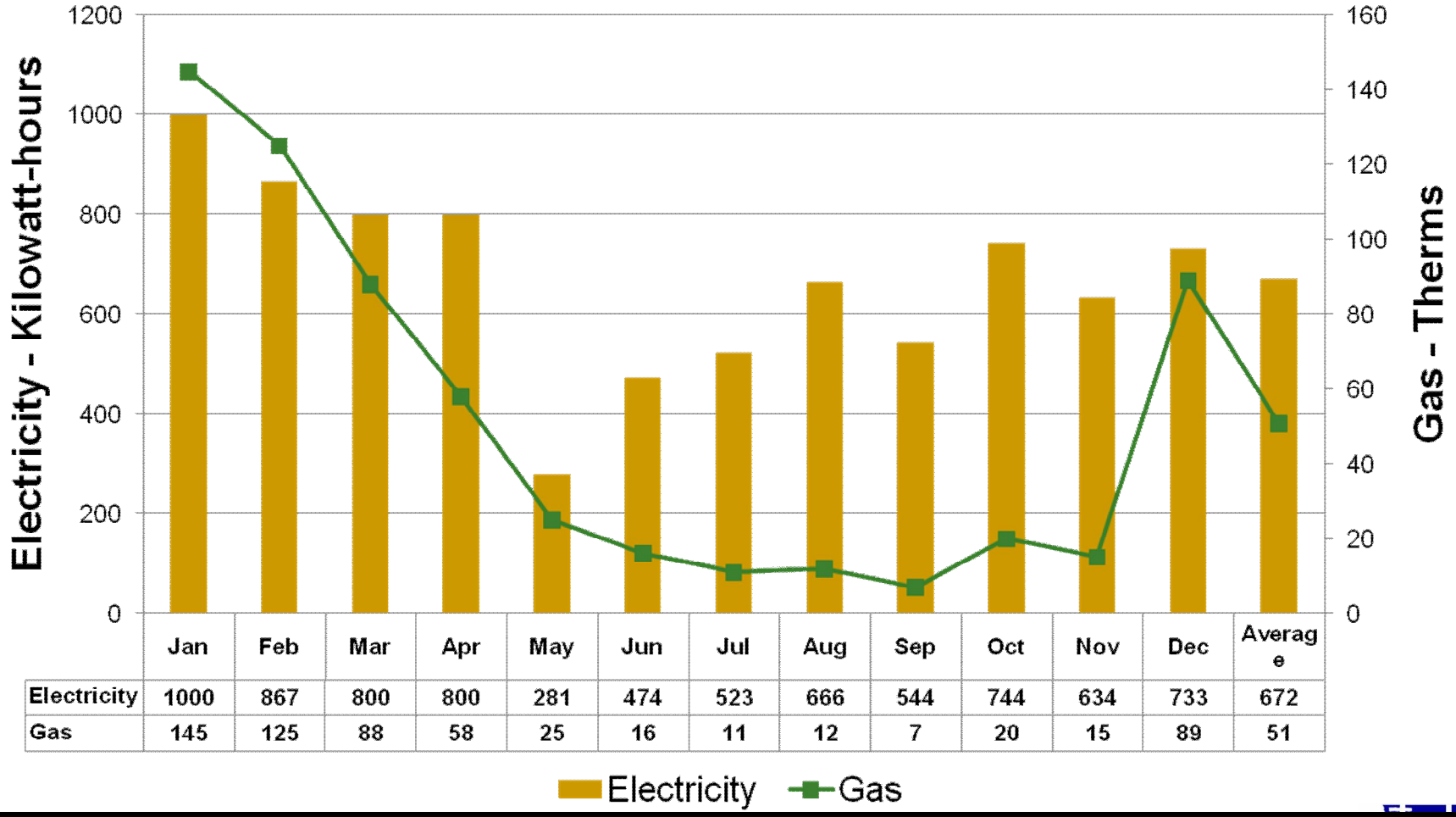
PNM Territory

Form of Energy	Average Household Energy [1]	Average Rate [2]	Household Energy Costs	CO2 Generated in Pounds
Electricity	7085 kWh	$0.094	$666	9,900
Natural Gas	711 therms	$0.67	$476	8,500
Total			**$1,142**	**18,400**

1. Source: PNM Federal Energy Regulatory Commission report for 2006 for Electricity, 2004 for Natural Gas
2. Current rates from PNM & NM Gas

POSITIVE ENERGY

Sample Home Energy Bill



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Electricity	1000	867	800	800	281	474	523	666	544	744	634	733	672
Gas	145	125	88	58	25	16	11	12	7	20	15	89	51

POSITIVE ENERGY

Renewable Energy Markets

Solar Electricity - PV

Wind Generators (Electricity)

Solar Thermal

Hot water & Heating

Solar Air Collector - Heat

POSITIVE ENERGY

Tax Incentives for Renewable Energy

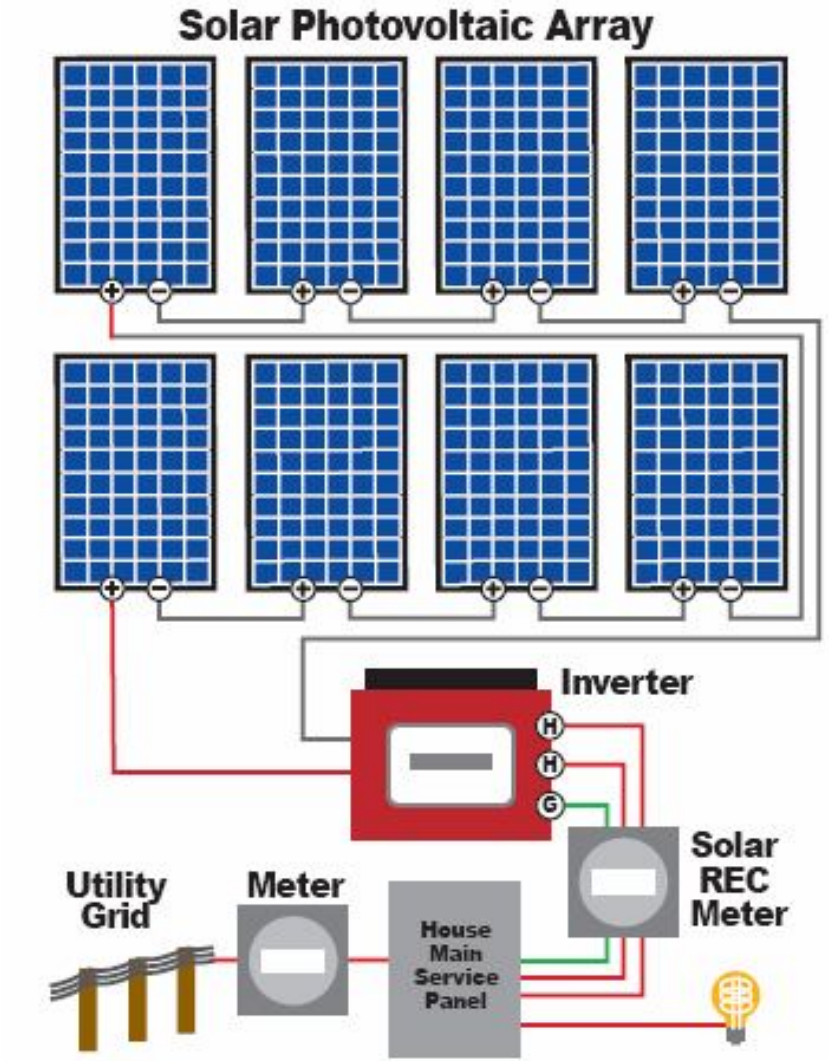
Description	Tax Credits	Other
Photovoltaics	30% federal, 10% state ($9k) [1]	GRT exemption, net metering, 13 cent REC's
Solar Thermal (except pools or hot tubs)	30% federal, 10% state ($9k) [1]	GRT exemption
Wind Generators	30% federal	Net metering
Solar Air Collectors	10% state ($9k)	
Geothermal heat pumps	30% federal	

1. Residential and non-corporate businesses

POSITIVE ENERGY

Photovoltaics

Grid-tied Solar System Components



- Solar Modules carry 25 year warranty
- Inverter carries 10-15 year warranty
- Cost range:

Roof $6.50-$7.50/Watt

Pole $10.0-$12.0/Watt

POSITIVE ENERGY

PV System Cost and Benefits

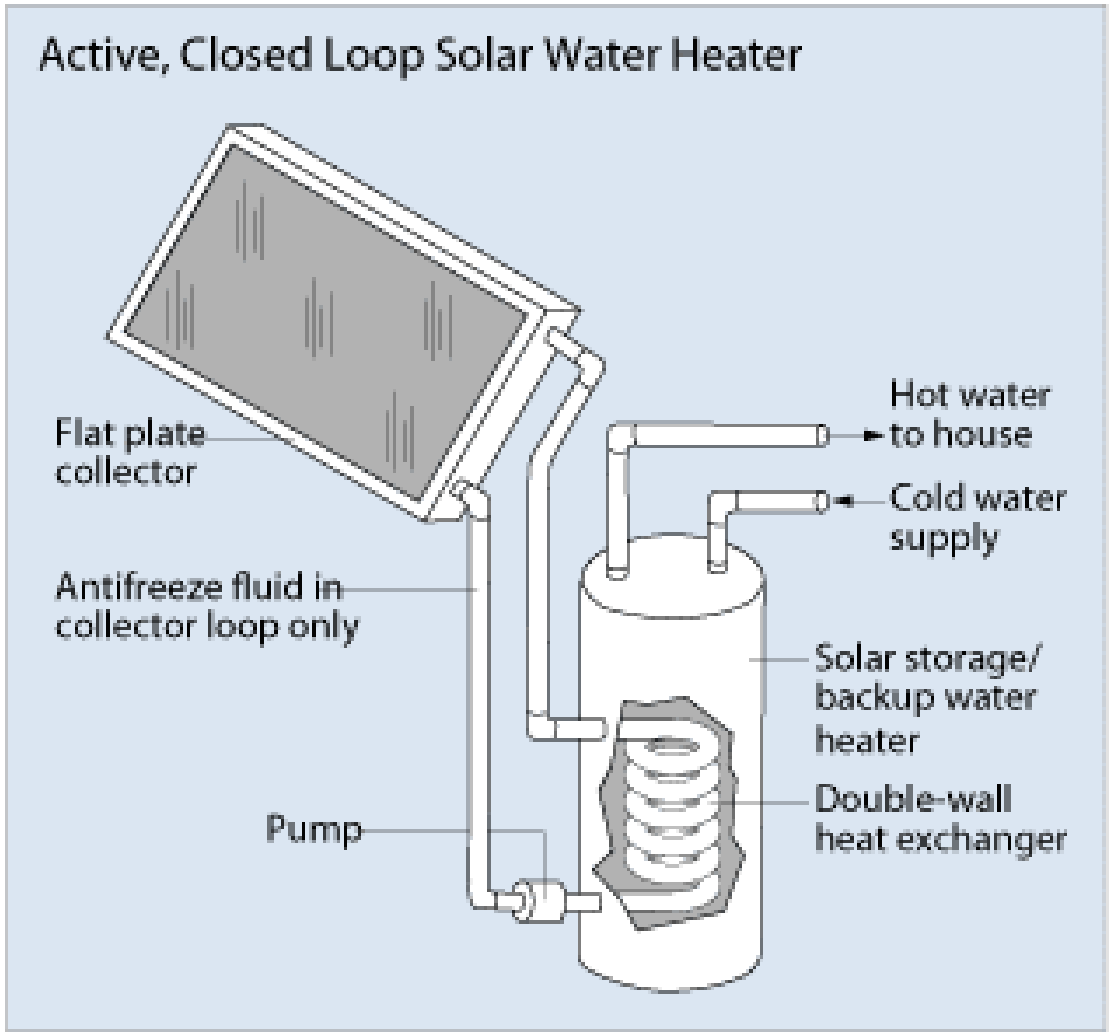
Typical electricity bill in New Mexico	**kWh**		**Total**
Average Annual [1]	7200	$	679.29
Solar Electric Investment - 3 kW offsetting			
68% of the energy		$	21,900
Federal tax credit			(6,570)
State tax credit			(2,190)
Net Investment		$	13,140
Annual net metering savings initially		$	517
Annual solar REC payment			641
Net annual savings		$	1,158
Years to pay back investment assuming 3% rate increase			11
CO2 offset at 1.4 pounds annually			6,900

1. PNM FERC report

POSITIVE ENERGY

Solar Thermal

Solar Hot Water Thermal Systems



Closed loop systems uses propylene glycol to prevent freezing

Typically includes expansion tank to address over-heating issues

POSITIVE ENERGY

Solar Hot Water System Cost & Benefits

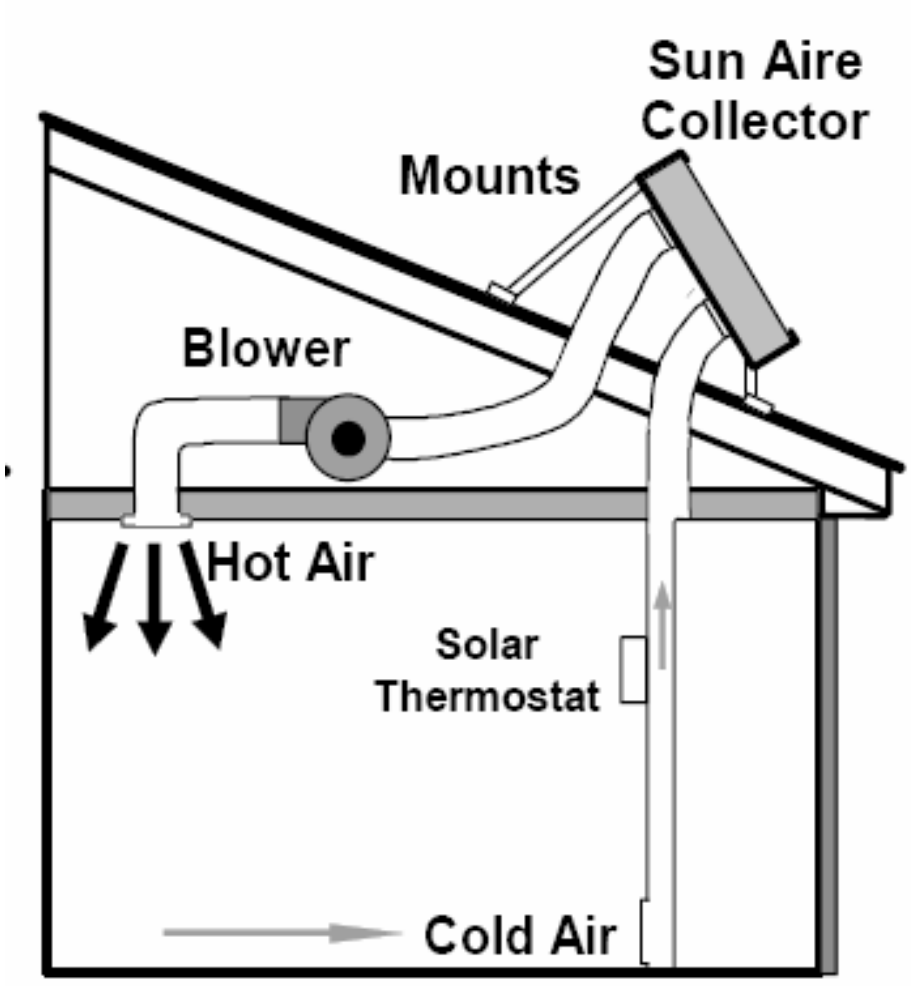
Typical Hot Water Cost per Household in NM	Therms	Total Cost
Average Annual [1]	300	$ 240.00
Solar Hot Water Investment		$ 5,000
Federal and State tax credits		$ (2,000)
Net investment		$ 3,000
Annual savings assuming 90% reduction		
assuming rate averages $1.00 per therm		$ 290
Payback in years		10
CO2 offset at 12 pounds annually		2,520

1. NM Gas Company monthly report to consumers

POSITIVE ENERGY

Solar Hot Air Collector

Solar Air Collector System



- System tilt angle set to maximize winter output at 50 degrees
- Blower can be solar powered
- Ideal application if zone space heating using electricity or if there is thermal mass to store heat

POSITIVE ENERGY

Solar System Benefits

	kWh	Total Cost	
Avg rate for winter heating		$	0.11
Average per Heating Season	1200	$	132
Solar Hot Air Collector Investment		$	2,000
State tax credit		$	(600)
Net investment		$	1,400
Annual savings assuming 50% reduction		$	66
Return in years			21
CO2 offset at 1.4 pounds annually			840

POSITIVE ENERGY


POSITIVE
ENERGY
We’re reminded of the best energy solution every day.

City of Santa Fe
Renewable Energy Expo 2010

Nicholas Schiavo, P.E.
Energy Specialist
City of Santa Fe

Energy Efficiency - PV's Ugly Stepsister

- Every Home is Different, but
  - Lighting
    - Easiest and least expensive
  - Appliances – Ex: Refrigerator
    - **$140 - Old 1976-86 fridge** (1400 kWh/yr.)
    - **$50 - Post-2001 fridge** (500 kWh/yr.)
    - **$42 - Post-2001 Energy Star fridge** (425 kWh/yr.)
  - Building envelope
    - Roof: R38 & Walls: R19
      - Typical 2 x 4 construction – Fiberglass batts R3.6/inch = R12
      - Foil-faced Polyisocyanurate rigid panel R6.8
    - Air gaps around doors and windows
    - Insulation on duct work
    - Thermal bypass
    - R Value of Soil approx. 0.25/ inch

Changing Light Bulbs

- (10) 100 watt incandescent bulbs
- Each runs 4 hours/day
- Change to (10) 26 watt bulbs; cost =$40
- 10*4*365*74 (watts saved) divided by 1000
- 1,080 kWh saved/year
- Savings = $104/year at 9.6 cents/kWh
- Payback less than half a year

What Does This Mean for PV?

- Average annual residential kWh = 6,792
- Assuming 2,000 hours of full generation/year, would need a 3.4 kW system
- If 1,080 kWh were shaved off, would need a 2.8 kW system
- At $6/watt, this means savings of $3,600 before tax credits

More Low-Hanging Fruit: Programmable thermostats

- Cost = $40
- Average annual residential therms = 744
- Reduce natural gas use by 8% = 60 therms
- At $0.60 cents/therm, annual savings = $36
- Payback period = 1 year

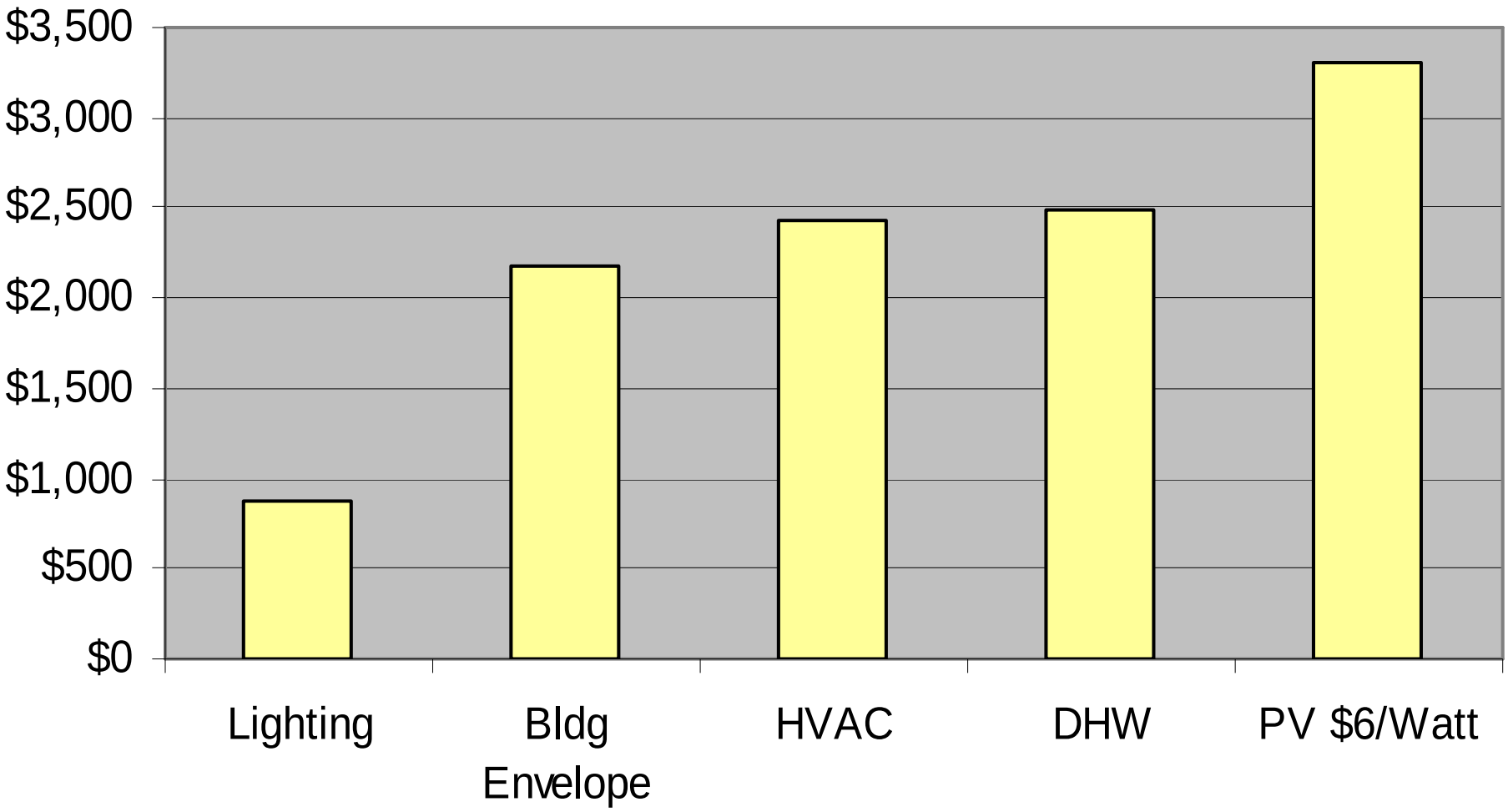
New Windows or Just the Blinds

Windows		
Single Glass		0.91
w/storm		2.00
Double insulating glass (3/16") air space		1.61
(1/4" air space)		1.69
(1/2" air space)		2.04
(3/4" air space)		2.38
(1/2" w/ Low-E 0.20)		3.13
(w/ suspended film)		2.77
(w/ 2 suspended films)		3.85
(w/ suspended film and low-E)		4.05
Triple insulating glass (1/4" air spaces)		2.56
(1/2" air spaces)		3.23
Addition for tight fitting drapes or shades, or closed blinds		0.29

Windows Vs. Blinds Continued

- Airtight and Custom Fit
- Cellular or honeycomb construction = R2.0
- Window quilts - air and moisture-tight fabric along with 4-sided seals = R4.0
- Draperies and Roman Shades = R3.0
  - Actual R-values dependent on fabric, lining and pleating
- Exceptions
  - Metal Framed Windows

Cost to avoid producing One Ton of GHGs



Homewise
Energy Loan Program
a partnership with
The City of Santa Fe

homewise™

Homewise

The mission of Homewise is to help working New Mexicans become successful homeowners in order to achieve financial security, strengthen families and increase the economic and social vitality of our communities.

The Romeros are Homewise Homeowners

homewise™

Homewise Energy Loan Program

The Abbotts save money every month with the energy-saving improvements made to their home

- **Energy Efficiency Improvements**
- **Renewable Energy Projects**

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Energy Efficency Projects

- **Roof** Replacement with Insulation
- **Stucco** with Insulation
- **Insulation** Adding insulation to Walls, Crawl Spaces & Attics
- **Air & Duct Sealing**
- **Window Replacement** - Energy Star® rated Windows
- **High Efficiency Furnace** or **Boiler** - Energy Star® rated

homewise™

Renewable Energy Projects

- **Solar Photovoltaic Systems**
- **Solar Domestic Hot Water**
- **Solar Thermal Heat**

homewise™

Energy Loan Program Qualifications

- ***Home located in City of Santa Fe Limits***
- ***Primary Residence***
- ***Energy Efficiency and/or Renewable Project***
- ***Project completed by a Licensed & Insured Contractor***
- ***Low to Moderate Income households***
  Total Gross Household Income 120% AMI or below (Area Median Income for Santa Fe County)

homewise™

Energy Loan Details

- 4% Fixed Rate of Interest
- $30,000.00 Maximum Loan Amount
- Term – up to 30 years
- No Pre-Payment Penalties

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Homewise Energy Loan Benefits

- A low monthly payment to do the projects you want and need
- Save Energy
- Save Money on your Monthly Utility Costs

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Homewise
Home Improvement Services

Assistance from Start to Finish with your Project!

- Project Assessment
- Detailed Specifications
- Complete Bid Package
- Place Project Out to Bid with Licensed & Insured Contractors
- Bid Analysis
- Low Interest Loan with an Affordable Monthly Payment
- Pre- Construction Meeting with your chosen Contractor
- Payout Inspections

homewise™

Homewise
Home Improvement Services
Benefits

- Assistance start to finish
- Licensed & Insured Contractors
- Competitive Bid
- Peace of Mind

homewise™

Homewise Energy Loan Program
Get Started!

- See Us Today 9-12
- Check out our Web Site www.homewise.org
- Stop by 1301 Siler Road, Building D
- Call Us at 983-WISE(9473)

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